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Hedonic Information Systems: What We Know and What We Don't Know

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Research paper

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Abstract

Users spend an increasing amount of time with pleasure-oriented technologies, such as video games or digital entertainment services, and these systems are of growing relevance as a business segment. In the light of this development, the information systems (IS) discipline has been criticized for dedicating insufficient research effort to these types of system, which are referred to as hedonic IS. Therefore, we conducted a descriptive literature review within the top 40 IS journals to summarize past research on hedonic IS and to identify research gaps. To structure our analysis, we separated the studies in our sample between those taking a user and those taking a provider perspective, assigned them to the phases of two life cycle models, and categorized the studies according to the investigated system type. The results reveal that hedonic IS research mostly takes a user perspective, predominantly addresses the (continued) use phase of the user life cycle, and investigates five different system types. Based on our findings, we point out promising opportunities for future research. Thus, our review may help researchers to plan further studies on hedonic IS.

Keywords: Hedonic IS, IS discipline, Literature review, IS life cycle.

1 Introduction

Following the diffusion of personal information technology, consumers spend an increasing amount of time using digital devices (Anderson, 2015; The Nielsen Company, 2017). Among the drivers of this growth are information systems (IS) inducing pleasant, enjoyable, and entertaining user experiences such as virtual worlds or social network services (SNS). Within the academic IS discipline, these types of system are referred to as hedonic IS (van der Heijden, 2004). In recent years, the economic importance of hedonic IS has increased, which is reflected in growing sales figures and rising valuations of hedonic IS providers. Although first research on hedonic IS was conducted at the end of the 1990s, several scholars have claimed that the attention paid to this field is insufficient given its economic development (Liu et al., 2013a; Lowry et al., 2013a). This raises the question of what the IS discipline currently knows about hedonic IS.

Previous studies have summarized research on certain hedonic IS types (Jäkälä and Pekkola, 2007) or analyzed specific constructs across hedonic and utilitarian contexts (Gerow et al., 2013; Hess et al., 2014; Wu and Lu, 2013). In addition to this work, we think it is necessary to comprehensively review the existing literature on hedonic IS within the IS discipline and to determine which direction future research should take. Consequently, we conducted a descriptive literature review of 95 studies on hedonic IS from the top 40 IS journals. To structure our review, we analyzed the literature based on three questions: whether the study takes a user or a provider perspective, which stage of the IS life cycle the study addresses, and which type of system the study investigates. While we derived the system typology inductively from our literature sample, we used the user life cycle (Furneaux and

Wade, 2011; Maier et al., 2015) and the staged model of software lifespan (Rajlich and Bennett, 2000) to distinguish between IS life cycle phases from a user and a provider perspective. In short, the results of our review show that hedonic IS research examines five different system types, mostly takes a user perspective, and has a strong focus on (continued) use. Based on these findings, we propose an agenda for future research on hedonic IS.

Our study contributes to IS research in several ways. We provide the first comprehensive account of research on hedonic IS within the IS discipline and aggregate the knowledge that has been gathered in this research stream. Scholars conducting research on hedonic IS can use this account as a foundation for their projects and to position their work. Furthermore, we indicate gaps in the literature that need to be addressed to improve our understanding of hedonic IS characteristics and their implications for users and providers of hedonic IS. By providing inspiration for future research efforts, our study helps to advance the knowledge about hedonic IS within the IS discipline. In this paper, we proceed by introducing hedonic IS, as well as the IS life cycle from a user and from a provider perspective as our conceptual foundations. Afterwards, we explain our review process and present our results. The paper closes with a conclusion, the research agenda, and a discussion of our study's limitations.

2 Conceptual Foundations

2.1 Hedonic IS

When personal computers and Internet access became common parts of peoples' homes, IS scholars realized that these systems do not only serve productivity-oriented purposes (Venkatesh, 1996; Venkatesh and Brown, 2001). Instead, these systems were also used for their own sake because they could create pleasant user experiences. Whereas studies of IS adoption and use at the workplace had identified usefulness as the most important predictor of user behavior, enjoyment superseded usefulness in several private contexts (Atkinson and Kydd, 1997; Moon and Kim, 2001). Therefore, van der Heijden (2004) introduced system nature as a boundary condition to the validity of previous results. He concluded that "what shapes intentions to use is dependent on the utilitarian or hedonic nature of the information system" (van der Heijden, 2004, p. 696).

The differentiation between utilitarian and hedonic IS stems from the literature on consumer behavior. Hedonic consumption is defined as "those facets of consumer behavior that relate to the multisensory, fantasy and emotive aspects of one's experience with products" (Hirschman and Holbrook, 1982, p. 92). Accordingly, IS can be classified as hedonic if they stimulate the users' fantasy and/or evoke emotive responses, such as joy, jealousy, or fear. In contrast to utilitarian IS, which are of instrumental value to their users because they serve as means to achieve external goals, hedonic IS provide self-fulfilling value (van der Heijden, 2004). The reason to use a hedonic IS is therefore the system itself. Accordingly, hedonic IS are designed to encourage prolonged use whereas the design objective of utilitarian IS is productive use. Table 1 summarizes the differences between hedonic and utilitarian IS.

	Hedonic IS	**Utilitarian IS**
purpose	pleasure-oriented	productivity-oriented
value provided	self-fulfilling	instrumental
reason for use	system itself	external goals
design objective	prolonged use	productive use

Table 1. Comparison of hedonic and utilitarian IS

The distinction between utilitarian and hedonic IS is closely linked to motivation theory, which differentiates between extrinsic and intrinsic motivators (Deci, 1975; Ryan and Deci, 2000). Whereas intrinsically motivated behavior is inherently interesting or enjoyable, extrinsically motivated behavior aims at a separable outcome. In their meta-analysis of IS use, Wu and Lu (2013) identified five

intrinsic (enjoyment, flow, playfulness, pleasure, arousal) and six extrinsic (usefulness, job relevance, image, affiliation motivation, reward, punishment) motivators of IS use. The study revealed that extrinsic motivators have a dominant influence on utilitarian IS adoption whereas intrinsic motivators are more important in hedonic contexts.

Similar to human behavior, which can be both intrinsically and extrinsically motivated at the same time, IS can combine hedonic and utilitarian aspects. IS that cannot be classified as purely hedonic or utilitarian, are called dual-purposed IS (Chesney, 2008; Wu and Lu, 2013). The classification of a system can vary depending on the considered system level. Personal computers, for instance, are dual-purposed IS, which can comprise purely utilitarian (e.g. word processing software) and purely hedonic subsystems (e.g. video games). Our literature review focuses on purely hedonic IS.

2.2 The user and the provider perspective in IS research

Following the definition by Sidorova et al. (2008, p. 475), the academic IS discipline "focuses on how IT systems are developed and how individuals, groups, organizations and markets interact with IT." Based on their definition, the authors distinguish two fundamental perspectives within IS research. The first examines information technology itself and how it is developed. We refer to this perspective as the provider perspective. Database design, programming or query languages, and prototyping are exemplary topics dealt with in this research area. Besides system development, this perspective also encompasses the management of IS providers (Hess et al., 2012).

The second perspective comprises studies on how humans use and manage IS (Sidorova et al., 2008). This perspective, which we call user perspective, spans several levels from individual users to groups, organizations, and markets. Because hedonic IS are mostly used in private contexts, the individual user level is of particular interest for our review. Previous research at this level has dealt with topics such as user satisfaction, individual technology acceptance, trust, or privacy. Owing to the continuous digitization of everyday life, the individual user perspective has gained importance within IS research in recent years (Brenner et al., 2014). Both the user and the provider perspective can be differentiated further using respective IS life cycle models, which we introduce in the following.

2.3 IS life cycle models

2.3.1 The IS life cycle from a user perspective

Furneaux and Wade (2011) as well as Maier et al. (2015) have described the relationship between a user and an IS in terms of a user life cycle, which consists of the phases adoption, (continued) use, and termination of use. Adoption is the decision of whether to make use of an IS (Kwon and Zmud, 1987). Most of the studies on IS adoption (as well as on use) are theoretically founded on social psychology theories such as the theory of reasoned action (TRA), the theory of planned behavior (TPB), and the technology acceptance model (TAM). These theories explain user behavior as the result of consciously built intentions. Although adoption and use are often jointly discussed (Venkatesh et al., 2012), studies based on data of potential adopters and those based on data of actual users should be clearly distinguished because user attitudes and intentions can be affected by system adoption itself (Karahanna et al., 1999). In the user life cycle adoption and use are therefore two distinct phases.

A related question to whether a system is used, is whether the system use persists. Research on IS continuance, which refers to sustained use over a longer period of time (Bhattacherjee and Lin, 2015), seeks to answer this question. IS continuance research emerged from two separated theoretical stances, which were later merged (Hsu et al., 2004). The first viewed IS continuance as an extension of IS acceptance and is thus based on the same social psychology theories. The second, established by Bhattacherjee (2001), used the expectation-confirmation theory (ECT) to explain IS continuance as the result of a comparison between prior expectations and the actual experience. Both studies on IS use and continuance belong to the (continued) use phase of the user life cycle because both are concerned with actual users' usage intentions or behavior.

The user life cycle ends with the termination of system use, i.e. IS discontinuance or IS switching. Theoretically, IS discontinuance could be perceived as the non-existence of IS continuance. However, empirical findings have shown that continuance and discontinuance are distinct behaviors, which are driven by different antecedent sets (Parthasarathy and Bhattacherjee, 1998; Pollard, 2003). If a user does not simply terminate the use of an IS but replaces it with another one, this behavior is referred to as switching (Bhattacherjee and Park, 2014). A prominent theoretical framework to explain switching behavior is the push-pull-mooring (PPM) migration model (Ye and Potter, 2011). The PPM model distinguishes between negative factors at the origin (push) and attracting factors at the destination (pull), which promote migration, as well as mooring factors, which inhibit migration.

In addition to the life cycle stages suggested by Maier et al. (2015), we consider a pre-adoption phase. Like any purchase, IS adoption is preceded by a decision-making process including IS evaluation and selection. While IS research has thoroughly examined this process in the organizational context (Benlian and Hess, 2011; Jadhav and Sonar, 2009), less is known about the process leading to individual IS adoption. However, Roger's (1962) innovation decision process and the Engel-Kollat-Blackwell (EKB) model (Engel et al., 1968) are helpful in understanding this process. Both theories suggest that adopters collect and process information prior to the adoption decision. For the purpose of parsimony and brevity, we subsume these activities in a pre-adoption phase. The resulting full user life cycle model is depicted in Figure 1.

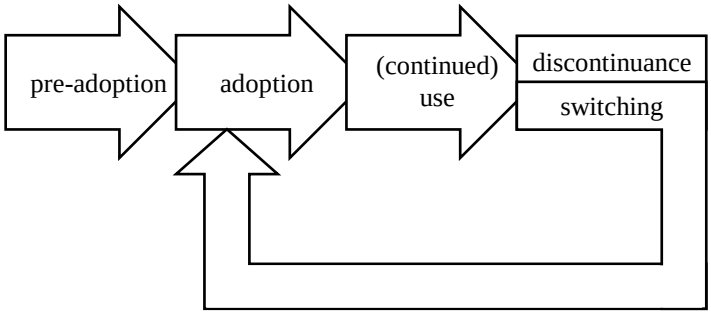

Figure 1. The user life cycle based on Maier et al. (2015)

2.3.2 The IS life cycle from a provider perspective

Like the relationship between a system and a user, the existence of the system itself can be segmented in life cycle phases. A suitable model to describe this system life cycle is the staged model of software lifespan (Rajlich and Bennett, 2000). This model particularly fits our study's purpose because it is not restricted to the software development stage but gives a comprehensive overview of a system providers' activities over a system's lifetime (see Figure 2).

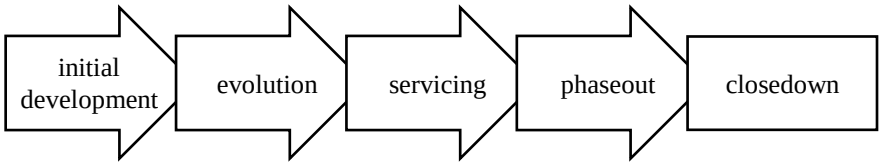

Figure 2. The system life cycle based on Rajlich and Bennett (2000)

A provider's activities over the lifetime of a system can be divided into five partly iterative phases (Rajlich and Bennett, 2000). The cycle begins with a system's initial development. During this phase, the developers create a first system version, which satisfies the basic requirements. The initial development process has been extensively researched and various models to organize this process have been proposed (Dingsøyr et al., 2012). The second phase of the system life cycle is evolution and usually comprises iterative system modifications to improve functionality. An important decision during the first two phases is when to release the system. Many start-ups follow the strategy of deploying a minimum viable product after the initial development and improving this product based

on users' feedback (Blank, 2013). Besides the technological maturity, the timing of a system release should also follow business considerations. At some point in time, the system provider will decide to stop the advancement of the software and shift resources towards other projects. This marks the beginning of the servicing phase, which means that the system is still maintained but not further improved (Rajlich and Bennett, 2000). As soon as the maintenance is discontinued, the system is in the phaseout stage of the system life cycle. This cycle ends with the closedown and thus the replacement of the system. It is important to note that this system life cycle is a simplified and idealized model. Providers can take several measures to extend system life. These measures include the release of subsequent product versions as, for instance, in the market for mobile operating systems, which pass through their own life cycle stages until being replaced with the next version

3 Methodology

The interest in literature reviews as a research method within the IS discipline has substantially increased over the last three years. The Communications of the Association of Information Systems and the Journal of Information Technology have published special issues on this method and the International Conference on Information Systems dedicated a panel to it (Schryen et al., 2016). This research project's objectives closely follow Rowe's (2014) definition of a literature review as a synthesis of past knowledge on a topic or domain of interest, identification of important biases and knowledge gaps in the literature, and the proposition of corresponding future research directions. Our topic of interest is the corpus of hedonic IS research within the IS discipline. Corresponding to our research goals, our literature review is of descriptive nature (Paré et al., 2015; Rowe, 2014). Therefore, we do not make a theoretical contribution but seek to summarize the literature on hedonic IS. While a broad discussion has evolved around the necessary degree of systematicity in literature reviews (Boell and Cecez-Kecmanovic, 2015; Schultze, 2015), we agree with Paré et al. (2016) in that all literature reviews require a systematic review process and thus follow their step-by-step framework in conducting our review.

Having formulated our research question and selected the appropriate review type, the next step was to define a search strategy. Although a literature review is supposed to base its findings on an exhaustive literature foundation (Levy and Ellis, 2006), covering a representative literature sample is justified for descriptive reviews (Paré et al., 2015). Therefore, we decided to use the top 40 journals of the IS discipline as listed by Lowry et al. (2013b) as target sources. To identify studies of hedonic IS within these sources, we searched all articles' titles, abstracts, and keywords for a comprehensive set of search terms being closely related to hedonic IS: hedonic, fun, enjoyment, entertainment, and pleasure (Lowry et al., 2013a; van der Heijden, 2004; Wang and Scheepers, 2012; Wu and Holsapple, 2014). We performed the search using several electronic libraries as well as archives on the journals' websites without setting a time boundary. All 404 search results were stored in an EndNote library for further analysis. We screened the library for papers to be included in our review in a two-step process. First, we purged the library by excluding editors' comments, book reviews, conference reviews, interviews, or teaching cases. Second, we applied the distinction between utilitarian, dual-purposed, and hedonic IS introduced by Wu and Lu (2013) as inclusion rule for our final literature sample. They classify a system as hedonic if it is employed for pleasure-oriented purposes more than 80% of the time of use. Using this definition, two independent raters analyzed each article based on the title, abstract, and, if necessary, the full-text to decide whether it dealt with a hedonic IS or not. The inter-rater agreement was 88.86%, which is in line with the results from comparable rating tasks (Hess et al., 2014; Wu and Lu, 2013). Different ratings were discussed and reconciled by the two raters. Among other things, the raters discussed whether to include previous literature reviews (Fuller et al., 2007; Jäkälä and Pekkola, 2007) as well as meta-analyses (Gerow et al., 2013; Hess et al., 2014; Wu and Lu, 2013), which compare research results across system nature. The raters decided not to include these studies in our sample because they do not directly investigate hedonic IS. Nevertheless, these studies aggregate valuable insights and we will use these to contrast our findings within the discussion section of this paper.

Following these procedures, we obtained a sample of 94 articles. We refrained from a quality appraisal of these articles since this step is optional for descriptive reviews (Paré et al., 2015) and because we had restricted our search to the top 40 IS journals. Out of these journals, 27 contained at least one article that met our search and inclusion criteria. All journals of the IS senior scholars' basket are represented in our sample. The most frequently represented journals are Information & Management, the Journal of Computer Information Systems, and Information Technology & People (see Table 2). To show how research on hedonic IS has developed over time, we clustered all articles into time-spans of five years, counting from 2017 backwards. The first article in our sample was published in 1997. Since then, the interest in hedonic IS has steadily increased. Overall, hedonic IS have conceived considerable attention within the IS community.

Journal	**<2003**	**2003-2007**	**2008-2012**	**2013-2017**	**Total**
Australasian Journal of Information Systems	1	0	0	0	1
Communications of the Association for Information Systems	0	0	2	0	2
Decision Support Systems	0	0	1	3	4
Electronic Commerce Research and Applications	0	1	2	2	5
Electronic Markets	2	0	1	3	6
European Journal of Information Systems	0	0	1	4	5
Information & Management	0	3	3	9	15
Information Systems Frontiers	0	0	1	0	1
Information Systems Journal	0	0	1	2	3
Information Systems Management	0	0	0	2	2
Information Systems Research	0	0	0	1	1
Information Technology & Management	0	0	1	0	1
Information Technology & People	0	0	2	5	7
International Journal of Electronic Commerce	0	0	1	2	3
Journal of Computer Information Systems	0	0	4	5	9
Journal of Database Management	0	0	0	1	1
Journal of Global Information Management	0	0	0	3	3
Journal of Global Information Technology Management	0	0	0	2	2
Journal of Information Technology	0	0	2	0	2
Journal of Information Technology Management	0	0	1	0	1
Journal of International Technology and Information Management	0	0	1	0	1
Journal of Management Information Systems	0	2	1	1	4
Journal of Organizational and End User Computing	0	0	0	2	2
Journal of Strategic Information Systems	0	0	0	1	1
Journal of the Association for Information Systems	0	0	0	4	4
MIS Quarterly	0	1	2	1	4
The DATA BASE for Advances in Information Systems	1	1	2	0	4
Total	**4**	**8**	**29**	**53**	**94**

Table 2. Number of articles by journal over time

While our sample comprised 94 articles in total, we had to exclude three of these from further analysis because we were unable to retrieve the full-text. Four articles in our sample reported on two distinct studies, which we analyzed separately. Consequently, we analyzed 95 studies from 91 articles in our review. To synthesize the findings from these studies, we extracted several characteristics including a

description of the investigated system, the focal variable or concept, the research design, the theoretical foundation, and the core findings. Based on this data, we categorized the studies along three dimensions. The first was the perspective the study took (user vs. provider), the second the phase of the respective life cycle the study addressed, and the third the investigated system type. While the first two dimensions stem from our conceptual foundations, we inductively derived hedonic IS types from the system descriptions in our sample studies. As a result, we obtained two concept matrices (Webster and Watson, 2002): one for studies taking a user perspective and one for studies from a provider perspective with the system types as rows and the phases of the according life cycles as columns. The two concept matrices are shown in the appendix.

4 Results

4.1 Hedonic IS types

By grouping the studies in our sample according to the investigated system, we observed five different system types: SNS, virtual worlds, video games, media entertainment systems, and gambling or betting systems. These categories covered all but one study, which investigated a system to program Lego robots (Chesney, 2008). When distinguishing between system categories, it is important to note that the boundaries between the categories are blurred. Massive multiplayer online games (MMOGs), for example, provide players with a virtual environment to compete in and are therefore also referred to as virtual worlds (Holsapple and Wu, 2007; Sharma and Baoku, 2013; Weiss and Schiele, 2013). Following Goel et al. (2011), we differentiated between gaming and non-gaming virtual worlds and classified gaming virtual worlds as video games. Similar to the differentiation between hedonic and utilitarian IS, the systems investigated in our sample can comprise subsystems, which belong to a different category than the parent system. Chen et al. (2016), for instance, investigate social games within the Chinese SNS Renren. For our categorization, we focused on the subsystem that was at the core of the investigation, which in this case were the games within the SNS and not the SNS itself. Additionally, we analyzed whether the studies investigated a specific system within the system category (e.g. Facebook as SNS) or examined the system category as a whole.

Whereas early research on hedonic IS mostly studied video games or media entertainment systems (e.g. Ju and Wagner, 1997; van der Heijden, 2003), SNS have become increasingly important over time and are now the most common hedonic IS type in our sample. Among the 36 studies addressing SNS, eleven relied on the example of Facebook. Moreover, studies surveying SNS users in general often have a large share of Facebook users in their samples (e.g. Hu et al., 2015; Xu et al., 2014). We observed a similar concentration in the research on virtual worlds: 13 out of 15 studies focused on Second Life. Therefore, the knowledge about SNS and virtual worlds within IS research is, to a certain extent, influenced by the design of these two specific systems and their users' behavior. In contrast, research on video games and media entertainment is much more dispersed and covers a wider array of different systems. The research on video games (24 studies) ranges from simple card games for PC (Chesney, 2008) to online (Lin and Bhattacherjee, 2010), mobile (Ha et al., 2007), and social games (Chen et al., 2016). The 17 studies covering media entertainment systems include five studies that are concerned with some form of digital television and four studies on mobile entertainment services. Finally, two studies in our sample dealt with gambling or betting systems (Hämäläinen et al., 2006; Xiao et al., 2014). Except for a study on e-book reader adoption (Torres et al., 2014), all articles within our sample examined software-based systems.

4.2 Hedonic IS research along the user life cycle

4.2.1 Overview

Hedonic IS research within the top 40 IS journals mostly takes a user perspective. We assigned 86 out of the 95 studies in our sample to the user life cycle. Among these, 65 belong to the (continued) use

phase (see Table 3 in the appendix). This phase also comprises studies which do not investigate use itself but usage-related beliefs or attitudes such as trust or enjoyment (e.g. Liu et al., 2013a). However, given the relevance of adoption research within the IS discipline, it is surprising that only 17 studies in our sample address this phase. The adoption of SNS appears to be particularly understudied. Hedonic IS research pays even less attention to the termination of system use, with only four studies investigating discontinuance or switching, all of which were conducted in the context of SNS. This is surprising given the high relevance of retaining users for the providers of hedonic IS. Finally, we could not find any study within our sample that addressed the pre-adoption phase, which shows a research gap on how users evaluate and select hedonic IS before adopting them. Consequently, the following findings of our review are restricted to the last four phases of the user life cycle.

4.2.2 Adoption phase

Most of the 17 studies within the adoption phase seek to explain users' intention to use or their attitude towards a hedonic IS. The prevalent theory among these studies is TAM. The research methods chosen in these studies are either surveys or experiments, in which participants are typically informed about or confronted with a hedonic IS and then questioned about this system. Apart from the studies on user intentions and attitudes, studies in the adoption phase investigated potential learning outcomes of using hedonic IS (Ju and Wagner, 1997; Schiller et al., 2013) and gender differences in user perceptions (Nah and Eschenbrenner, 2016).

Overall, the findings of the studies in the adoption phase show a positive influence of enjoyment on user attitudes and intentions (Ha et al., 2007; Hu et al., 2011; Junglas et al., 2013; Lowry et al., 2013a; Nah et al., 2011; Shin, 2012; Torres et al., 2014; Xu et al., 2010). Further positive influence factors on hedonic IS adoption are related to the experience offered by the system. These factors include flow (Goel et al., 2013; Ha et al., 2007; Shin, 2012), cognitive absorption (Goel et al., 2011; Lowry et al., 2013a), telepresence (Nah et al., 2011), and social presence (Shin, 2012). Some factors promoting system adoption are specific to certain system types, such as social influences for systems in which users can interact with each other (Hu et al., 2011; Junglas et al., 2013) and content characteristics for media entertainment systems (Shin, 2012; Torres et al., 2014; Xu et al., 2010). The effects of hedonic IS' perceived benefits on user attitudes and intentions can be moderated by context or user characteristics such as culture (Constantiou et al., 2009; Kondo and Ishida, 2014) or gender (Nah and Eschenbrenner, 2016).

In contrast, the findings on the influence of usefulness and ease of use on the adoption of hedonic IS are inconsistent. Whereas the results by Shin (2012), Junglas et al. (2013), Lowry et al. (2013a), and Torres et al. (2014) confirmed a positive influence by usefulness, those by Ha et al. (2007) and Hu et al. (2011) did not. Similarly, Ha et al. (2007) and Hu et al. (2011) found a direct effect of ease of use on user intentions, while Junglas et al. (2013), Lowry et al. (2013a), and Torres et al. (2014) did not. The studies investigating both concepts found a direct effect of either one or the other but not of both simultaneously. However, in accordance with TAM, all the studies confirmed an influence of ease of use on usefulness.

4.2.3 (Continued) use phase

The most prevalent variables sought to be explained by studies in the (continued) use phase are use and continuance. Out of 20 studies on use, 14 are based on TAM. The theoretical foundations of continuance research are broader, with four applications of ECT and three applications of TAM within 20 studies. Further research topics in this life cycle phase include information sharing (e.g. Krasnova et al., 2010; Luarn et al., 2015), users' willingness to pay or purchase behavior (e.g. Guo and Barnes, 2012; Lopes and Galletta, 2006), the use of hedonic IS for work purposes (e.g. Nevo et al., 2012), or negative outcomes of hedonic IS use (e.g. Turel and Serenko, 2012). The most used methodology in the (continued) use phase are quantitative surveys. 58 out of 64 studies applied this research method. The remaining studies comprise three secondary data analyses, two experiments, and two case studies.

The findings from the studies investigating hedonic IS use resemble those from the studies in the adoption phase. Enjoyment is found to have a strong influence on hedonic IS use intention and behavior (Chen et al., 2016; Holsapple and Wu, 2008; Kim et al., 2011; Lin and Bhattacherjee, 2010; Mun et al., 2010; van der Heijden, 2003, 2004). However, in games contexts, the effect of enjoyment is diminished if the use of hedonic IS becomes professional in nature (Weiss and Schiele, 2013) or if opponents become more skilled (Liu et al., 2013a). In some studies, enjoyment is replaced by or measured in relation to playfulness (Hung et al., 2016; Sledgianowski and Kulviwat, 2009; Turel et al., 2010) or hedonic value (Cocosila and Igonor, 2015). Further antecedents of hedonic IS use include flow (Hsu and Lu, 2004; Pelet et al., 2017; Wu and Holsapple, 2014), trust (Sledgianowski and Kulviwat, 2009), and accessibility (Mun et al., 2010; Xu et al., 2012). The influence of content characteristics on the use of media entertainment systems (Chimenti et al., 2014; Mun et al., 2010; Qiu et al., 2015; Turel et al., 2010) as well as of social factors on the use of hedonic IS enabling user interaction (Cocosila and Igonor, 2015; Hsu and Lu, 2004; Kim et al., 2011; Lin and Bhattacherjee, 2010; Scheepers et al., 2014; Sledgianowski and Kulviwat, 2009; Xu et al., 2012) were also confirmed. Similar to the studies in the adoption phase, the role of usefulness and ease of use in determining user intentions and behavior towards hedonic IS cannot yet consistently be explained (Holsapple and Wu, 2008; Hsu and Lu, 2004; Hung et al., 2016; Sledgianowski and Kulviwat, 2009; van der Heijden, 2003, 2004; Wu and Holsapple, 2014). A special characteristic of hedonic IS use is that users may use similar systems (e.g. two different SNS) simultaneously, which is called multi-homing, as long as these are sufficiently complementary in nature (Gu et al., 2016).

In contrast to the research on hedonic IS use, studies on hedonic IS continuance usually take previous usage experiences into account. In accordance with the ECT, satisfaction with these experiences has a positive influence on continuance (Hu et al., 2015; Lin et al., 2014; Lin et al., 2017; Lowry et al., 2015; Seol et al., 2016; Sun et al., 2014; Yin et al., 2013; Yoon and Rolland, 2015; Zhou et al., 2012; Zhou et al., 2014). Satisfaction itself is positively affected by a set of factors similar to those promoting adoption and use, which includes enjoyment (Lowry et al., 2015; Yin et al., 2013; Yoon and Rolland, 2015) and usefulness (Seol et al., 2016; Sun et al., 2014; Yoon and Rolland, 2015). Ongoing positive usage experiences can also lead to the forming of habitual hedonic IS use, which is a strong predictor of continuance (Barnes, 2011; Guopeng and Ling, 2014). Apart from the effects related to prior use, hedonic IS continuance is also directly influenced by enjoyment (Barnes, 2011; Cheikh-Ammar and Barki, 2016; Hsiao and Chiou, 2012; Lin et al., 2017; Liu et al., 2013b; Lowry et al., 2015; Lu et al., 2011; Seol et al., 2016; Sun et al., 2014; Wang and Scheepers, 2012; Yang and Lin, 2014; Yoon and Rolland, 2015) and usefulness (Barnes, 2011; Cheikh-Ammar and Barki, 2016; Lin et al., 2017; Liu et al., 2013b; Lowry et al., 2015; Seol et al., 2016; Sun et al., 2014; Yin et al., 2013; Yoon and Rolland, 2015). Additionally, we found further support for the importance of flow in game contexts (Hsiao and Tang, 2016; Wang and Scheepers, 2012) and of social aspects for SNS use (Cheikh-Ammar and Barki, 2016; Hsu et al., 2015; Hu et al., 2015; Lin et al., 2014; Lin et al., 2017; Lu et al., 2011; Seol et al., 2016; Sun et al., 2014; Yin et al., 2013). The literature on hedonic IS continuance also contains evidence for moderating effects of culture (Hsu et al., 2015; Zhou et al., 2015) and gender (Lin et al., 2017; Zhou et al., 2014).

Besides regular use of a hedonic IS, several studies have investigated active user participation, especially in (social) media contexts. The results show that information sharing in SNS is promoted by enjoyment, social factors, and trust in the provider, but inhibited by privacy risks (Krasnova et al., 2010; Liu et al., 2016; Luarn et al., 2015). Such effects on information sharing intentions are moderated by network reach and richness (Shang et al., 2017). Moreover, Pagani and Mirabello (2011) show that personal engagement and social-interactive engagement are determinants of active and passive usage in a social TV setting. Hughes (2010) examined transmutation of media and entertainment products (e.g. mixing songs) and found product involvement and innovativeness to be significant predictors of such behavior.

While continued use and active participation are prerequisites for hedonic IS success, another crucial question for their providers is whether users are willing to spend money for or within hedonic IS. Three studies in our sample investigate this question for MMOGs (Constantiou et al., 2012; Guo and

Barnes, 2012; Kim et al., 2013). The results show that the willingness to purchase items within MMOGs is positively influenced by the desire to advance and gain status in the game but negatively influenced by player skill and fairness considerations. Investigating profitable user behavior in SNS, Pöyry et al. (2013) show that utilitarianly motivated Facebook fan-page users have higher purchase and referral intentions than hedonically motivated ones. Manthiou et al. (2014) reveal that the decision-making Facebook fan pages is a dual route process comprising reasoned action and social reaction. Finally, Lopes and Galletta (2006) demonstrate that the willingness to pay for website content is driven by the expected benefits from using the content.

Although hedonic IS are designed for pleasure-oriented purposes, their use can also affect work life (Blodgett and Tapia, 2011). The intention to use virtual worlds at work, for instance, is positively influenced by cognitive absorption, which in turn is affected by recreational virtual world use (Nevo et al., 2012). Furthermore, SNS participation has a positive effect on personal and job performance (Salehan et al., 2017). While these effects can be regarded as positive externalities of hedonic IS use, excessive use of hedonic IS can also have negative consequences such as addiction (Turel, 2015a; Turel and Serenko, 2012).

4.2.4 Discontinuance or switching phase

Among the four studies on the termination of hedonic IS use, three investigate IS discontinuance (Maier et al., 2015; Turel, 2015b, 2016) and one IS switching (Xu et al., 2014). The studies on hedonic IS discontinuance show that negative externalities of hedonic IS use such as stress and consequent exhaustion (Maier et al., 2015) or addiction and related guilt feelings (Turel, 2015b) are important drivers of discontinuance intentions and subsequent behavior. The theoretical foundations of this work lie within social psychology and include the social cognitive theory and the social support theory as well as the TPB and TAM. The study by Xu et al. (2014) is based on the PPM model and shows that the intention to switch from one SNS to another is promoted by dissatisfaction with the entertainment value and socialization support of the incumbent SNS, attractiveness of the alternative SNS, and peer influence. In contrast, continuity costs, which refer to the loss of the value derived from the connection with other users, have a mooring effect on switching intention.

4.3 Hedonic IS research along the system life cycle

The research stream covering hedonic IS from a provider perspective is much smaller than that taking a user perspective and comprises only nine studies. However, every system type we had identified is addressed by at least one of these studies (see Table 4 in the appendix). We categorized two of the studies into the initial development and the remaining seven studies into the evolution phase. Consequently, the last three phases of the system life cycle have been ignored by hedonic IS research thus far. One of the studies in the initial development phase is a design science paper developing and testing a betting system with offline terminals (Hämäläinen et al., 2006). The second study uses qualitative interviews to identify drivers of mobile app adoption from a developer's perspective (Baghbaniyazdi et al., 2016). The study's result is a framework comprising the factors idea, design, marketing, and support.

Within the evolution phase, four conceptual studies deal with the question of monetizing hedonic IS. Clemons (2009) investigates this matter for SNS and suggests five possible monetization strategies. Gaustad (2002) discusses the problem of excludability for digital media and entertainment products while Loebbecke (1998) and Pramataris et al. (2001) investigate how TV stations can take advantage of digital distribution channels. Two further studies in the evolution phase seek to improve existing hedonic IS: Liao et al. (2015) develop and test a friend recommender system for virtual worlds and Daylamani-Zad et al. (2016) build a framework to improve collaborative decision making in video games. Lastly, Arakji and Lang (2007) use a formal modelling approach to show that MMOG providers should support users in creating game modifications as long as these are perceived as complements and not as substitutes to the original game.

5 Discussion

5.1 Conclusion and agenda for further research

Our literature review revealed that hedonic IS are of increasing interest within the IS discipline and are also covered within its highest-ranking outlets. The systems investigated in this research stream can be clustered into five categories: SNS, virtual worlds, video games, media entertainment systems, and gambling or betting systems. Hedonic IS research is strongly oriented towards consumer behavior, specifically towards (continued) use. A possible reason for the strong focus on this phase of the user life cycle is that users can be more easily identified and studied than potential adopters, discontinuers, or switchers. In line with the results by Wu and Lu (2013), our review found enjoyment to be an important predictor of hedonic IS usage, whereas the results regarding the roles of usefulness and ease of use are inconsistent. Furthermore, we found a set of influence factors on user behavior that are specific to certain system types. Among these are social factors (e.g. sense of belonging, social presence, or community identification) for all hedonic IS enabling interaction with other users, especially SNS, but also virtual worlds and games, content quality for media and entertainment services, and factors related to the users' experience for games and virtual worlds. Finally, culture and gender have been shown to be important moderators of the previously discussed effects.

Although hedonic IS research has already yielded valuable contributions to the IS discipline, it still holds substantial potential for further research. Based on our findings, we add to the persisting calls for further research and propose an agenda for future research on hedonic IS:

- Previous research on hedonic IS is limited with respect to the investigated system categories. Although the focus on these system categories may be justified by their relevance in the market, future studies should address different types of systems including hardware serving hedonic purposes, such as digital toys or virtual reality glasses. Promising research questions are: Do users' expectations towards new hedonic IS types differ from those towards previously investigated ones? In which contexts are these new hedonic IS types used? Does the diffusion of new hedonic IS types affect existing value chains or business models?
- Research on SNS and virtual worlds is dominated by the examples of Facebook and Second Life. This limits our knowledge's generalizability about these system types. Within the SNS category, more content-oriented services (e.g. Snapchat, Instagram, or Twitch) have appeared and deserve IS researchers' attention. These also introduce new system characteristics such as ephemerality of contributed content. Therefore, future research might address how user behavior differs between distinct SNS and whether these differences have implications for monetization. On the other hand, research on virtual worlds might profit from the diffusion of virtual reality applications, which will likely lead to the emergence of new virtual world systems. Potential research questions include how virtual world experiences differ between regular screen and virtual reality applications, how virtual reality worlds have to be designed in order for users to be able to orientate and navigate within them, and which purposes new virtual world systems can serve.
- The topics of hedonic IS research are mostly consumer-oriented. Future research should put more emphasis on the development and management of hedonic IS. Hedonic IS providers need to advance their product constantly or forward users to new versions to continuously deliver enjoyable experiences. Many successful video games, for instance, have multiple sequels. However, users do not always embrace updates or releases of new versions. It would therefore be worthwhile to investigate how hedonic IS providers can forward users smoothly from one system version to the next and how users could be integrated in the system evolution process to prevent negative user reactions. On the other hand, the past has seen many hedonic IS which failed to advance and lost users' attention rapidly (e.g. Myspace). An important question is therefore how hedonic IS providers can prevent such a decline of their user base. Although monetization is a prominent topic among the few studies from a provider perspective, many hedonic IS providers,

especially those of media entertainment systems, still struggle to establish viable business models. Thus, further research is needed on how users can be charged for hedonic IS.

- The strong focus of user-oriented hedonic IS research on (continued) use opens up further research opportunities within the remaining phases of the user life cycle. Future research may investigate how users inform themselves about and select between hedonic IS, whether these processes differ between hedonic and utilitarian IS, and how hedonic IS providers can position their systems in the market to increase the adoption likelihood. Moreover, additional research is needed on hedonic IS discontinuance and switching. Whereas the motivation to use utilitarian IS can be expected to be stable as long as their purpose persists, hedonic motivations are prone to change over time (Magni et al., 2010). Therefore, we need to understand how factors promoting and factors discouraging continued hedonic IS use develop over time and finally lead to a discontinuance or switching decision. Whereas most of the studies in our sample were quantitative, cross-sectional surveys both qualitative and longitudinal approaches will be needed to answer such questions.

5.2 Limitations

Although our literature sample covers the major publications of the IS discipline, it is limited in size and could be extended in various ways. First, we may search beyond the top 40 outlets in IS and include further journals, conference proceedings, and working papers. Second, literature sources from related fields, such as human-computer interaction, informatics, or marketing may be considered in the search process. Third, forward and backward searches are promising ways to identify further relevant literature, which might remain undetected by keyword search. Fourth, we could explicitly search for research on the specific system categories that has not been captured by our current search terms. Besides extending the sample, further possibilities lie in increasing the depth of the analysis. Thus far, we have aggregated and summarized the findings of the studies in our sample. Moving towards a theoretical mode of analysis might allow to build an overarching model of influence factors along the user and system life cycle for hedonic IS.

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Appendix

	Pre-adoption	**Adoption**	**(Continued) use**	**Discontinuance**	**Switching**	**Total**
Social network services	0	1	30	3	1	**35**
Virtual worlds	0	6	8	0	0	**14**
Video games	0	5	16	0	0	**21**
Media entertainment	0	5	9	0	0	**14**
Gambling or betting	0	0	1	0	0	**1**
Other	0	0	1	0	0	**1**
Total	**0**	**17**	**65**	**3**	**1**	**86**

Table 3. Concept matrix for hedonic IS literature taking a user perspective

	Initial development	**Evolution**	**Servicing**	**Phaseout**	**Closedown**	**Total**
Social network services	0	1	0	0	0	**1**
Virtual worlds	0	1	0	0	0	**1**
Video games	1	2	0	0	0	**3**
Media entertainment	0	3	0	0	0	**3**
Gambling or betting	1	0	0	0	0	**1**
Total	**2**	**7**	**0**	**0**	**0**	**9**

Table 4. Concept matrix for hedonic IS literature taking a provider perspective